EFFECT OF RECOVERY SUPPLEMENTARY FOOD PROGRAM ON NUTRITIONAL STATUS OF STUNTING TODDLERS AT CIMAHI CITY HEALTH CENTER APRIL-JULY 2021

(PENGARUH PROGRAM PEMBERIAN MAKANAN TAMBAHAN PEMULIHAN TERHADAP STATUS GIZI BALITA STUNTING DI PUSKESMAS KOTA CIMAHI PERIODE APRIL-JULI 2021)

Elly Noer Rochman[1], Iis Inayati Rakhmat*[2], Jihan Amalia[3], Maghvira Fazria Prilyadi[2]

[1]Department of Child Health, Faculty of Medicine, Jenderal Achmad Yani University, Cimahi. Indonesia

[2]Departement of Biochemical and Biomolecular, Faculty of Medicine, Jenderal Achmad Yani University, Cimahi. Indonesia

[3]Department of Nutrition, Faculty of Medicine, Jenderal Achmad Yani University, Cimahi. Indonesia

*Corresponding author
iis.inayati@lecture.unjani.ac.id

JHDS.unjani.ac.id/jite
Doi: 10.54052/jhds.

Article History
Received:02/01/22
Accepted: 02/02/22

ABSTRACT

The Provision of Supplementary Food Recovery or Pemberian Makanan Tambahan (PMT) recovery is one of the government programs in dealing with stunting cases in toddlers. This study was conducted to analyze changes in the nutritional status of children under five with BMI/U index before and after being given PMT-Recovery in the working area of Cimahi City Health Center. This was an analytic observational study with a cross-sectional research design. The location

of the research is in the working area of Cimahi City Health Center. The research was conducted in October-December 2021 or two months after the PMT Recovery program was implemented. In this study, the population used was children under five years old in the working area of Cimahi City Health Center who received PMT Recovery. The sample in this study was 33 children aged 6-59 months from the entire population who met the research inclusion criteria. Simple random sampling was used in this research. The nutritional status of children under five was checked using the anthropometric method of BB and TB, then BMI was calculated and then plotted using the WHO BMI/U index chart. The research targets were undernourished toddlers aged 6-59 months with a z-score of more than -2SD and malnourished toddlers aged 6-59 months who were given additional food. Statistical tests were performed using paired t-test with a significance level of <0.05. After three months of being given PMT Recovery, there was a decrease in the percentage of children under five with underweight nutritional status from 42.4% to 39.4%. There is a significant difference in the nutritional status of children under five based on BMI/U before and after PMT Recovery (p=0.05). There are differences in the nutritional status of children under five with BMI/U index before and after PMT-Recovery.
Keywords: nutritional status; stunting; supplementary food

ABSTRAK

Pemberian Makanan Tambahan Pemulihan merupakan salah satu program pemerintah dalam menangani kasus stunting pada balita. Penelitian ini dilakukan untuk menganalisis perubahan pada status gizi balita dengan indeks IMT/U sebelum dan setelah diberikan PMT-Pemulihan di wilayah kerja puskesmas kota Cimahi. Merupakan penelitian observasional analitik dengan desain penelitian cross sectional. Lokasi pelaksanaan penelitian adalah di wilayah kerja Puskesmas kota Cimahi. Penelitian dilakukan pada bulan Oktober-Desember 2021 atau dua bulan setelah dilaksanakannya program PMT Pemulihan. Pada penelitian ini populasi yang digunakan adalah

seluruh balita di wilayah kerja Puskesmas kota Cimahi yang telah mendapatkan PMT Pemulihan. Sampel pada penelitian ini adalah 33 balita usia 6-59 bulan dari keseluruhan populasi yang memenuhi kriteria inklusi penelitian. Teknik simple random sampling digunakan dalam melakukan pemilihan sampel. Status gizi balita diperiksa dengan metode antropometri BB dan TB kemudian dihitung IMT balita lalu diplot menggunakan grafik WHO indeks IMT/U. Sasaran penelitian adalah balita gizi kurang usia 6-59 bulan dengan nilai z-score lebih dari -2SD yang berada di wilayah kerja Puskesmas Kota Cimahi dan balita gizi kurang usia 6-59 bulan yang diberikan makanan tambahan. Uji secara statistik dilakukan menggunakan uji t berpasangan dengan tingkat signifikansi <0,05. Setelah tiga bulan diberi PMT Pemulihan, terdapat penurunan presentase balita dengan status gizi kurus dari 42,4% menjadi 39,4%. Terdapat perbedaan bermakna pada status gizi balita berdasarkan IMT/U sebelum dan setelah PMT Pemulihan (p=0,05. Terdapat perbedaan pada status gizi balita dengan indeks IMT/U sebelum dan setelah PMT-Pemulihan.
Kata kunci: *makanan tambahan; status gizi; stunting*

INTRODUCTION

The fulfillment of nutrition is one of the important factors to determine the success of a child's growth and development. Nutrition that meets the needs is needed by children, especially in their golden period. This golden period or golden age starts from the womb until the age of two years.[1] if the nutrition is not met both in terms of quantity and quality, there will be a problem in the growth and development of children which can cause non-optimal development. Cognitive or intelligence, not maximal growth in body posture, decreased reproductive health that continues in adulthood will give birth to low birth weight (LBW) babies, motor and verbal disorders, increased risk of metabolic diseases as adults, and the incidence of illness as a child and increases the risk of death in children.[2]

One way to find out whether there is a problem with a person's nutritional status is to conduct an assessment of nutritional status through measurements of several parameters and then the results are compared with standards or referrals.[3]

Anthropometric examination is one of the examinations that can be used as a reference for nutritional fulfillment in children and adults.[4] In the anthropometric examination of body weight according to height (BB/TB), several categories of nutritional status will be found; malnutrition, undernutrition, normal, and overnutrition.[5]

The Indonesian nutritional status monitoring agency in 2018 showed that nationally, under five with nutritional status, the prevalence was 17.70%6 and according to data from Cimahi City Health Office in February 2021, the figure was 11.5%.

Malnutrition status is one of the indications of a person with nutritional problems assessed from the index of BB/TB or BB/PB which can occur in a short time as a result of an acute event such as hunger, lack of intake, and disease outbreaks. Roles in the incidence of undernourished status are lack of nutrition in food, poor health and nutrition during pregnancy, frequent infections (poor quality of food and water), and inadequate breastfeeding.12 Implementation of IMD immediately after birth, breastfeeding Exclusive breastfeeding until the age of 6 months and continued with complementary feeding until the age of two years is a process to help the baby's growth and development. Parenting patterns and the accuracy of feeding infants also affect the fulfillment of nutrition in children.[13]

The nutritional status of the mother during pregnancy can be influenced by the nutritional status before pregnancy. Examination of nutritional status can be measured by weight gain during pregnancy, height, pre-pregnancy BMI, and upper arm circumference. This measurement is one way to determine the risk of nutritional status of Chronic Energy Deficiency (KEK) in fertile women. CED status before pregnancy affects fetal growth and is a consideration for achieving weight gain during pregnancy. Determination of the nutritional status of pregnant women can be done by calculating the pre-pregnancy BMI. WHO determines the normal limits for weight to height based on BMI/BMI. BMI can be calculated by weight (kg) divided by height (m2).[14]

The relationship between environmental conditions and nutritional status is interrelated, allowing changes in health status. For example, children who live in settlements with poor quality food and water can increase the risk of contracting infectious diseases, for example, parasitic infections that partially cause nutrient absorption disorders, and then malnutrition or poor nutritional status can occur.[16]

One of the government's policy programs to prevent and deal with the

occurrence of under-nutrition status in children under five and its consequences is to improve community nutrition, with the program of providing additional food (PMT). The provision of additional food is adjusted to the nutritional needs referring to the nutritional adequacy rate (RDA)[8] the food provided can be in the form of family food based on local food with home recipes. Nutritional supplementation can also be given in the form of additional food manufacturers that are more practical and have calculated contents.

Macro and micronutrients are the main focus of complementary feeding. Carbohydrates, proteins, and fats are examples of needed macronutrients, and vitamins and minerals are examples of micronutrients that also have a role. Protein has the most role in growth, assisted by carbohydrates and fats. Carbohydrates are the main source of energy in the human body. Energy functions to maintain various body functions such as circulation and protein synthesis. Protein is the main component of all body cells that function as membrane operator enzymes and hormones, one of which is growth hormone. Lacking carbohydrates and protein can have an impact on children's growth and development disorders. Fat has a major role to provide metabolic energy, the result is fatty acids. Fatty acids are divided into two namely saturated fatty acids and unsaturated fatty acids. Unsaturated fatty acids such as Docosahexaenoic Acid (DHA) and Arachidonic Acid (AA) are fatty acid chains that are needed in children's growth and development.[17]

Research conducted by Sekar, et al regarding changes in the nutritional status of children under five after PMT Recovery showed that there was no significant change in the nutritional status of the toddlers. Based on the BB/TB index, the prevalence of underweight toddlers remained at 34.4% even after PMT Recovery, while for toddlers with very thin nutritional status there was an increase in the percentage from 0% to 2.6%.[7]

PMT is divided into two; PMT-Recovery and PMT-Counseling. PMT-Recovery is intended to meet the nutritional intake of toddlers in the form of local foods that are consumed by toddlers only and serve as daily supplementary foods, not as main substitute foods. PMT recovery comes from processed factories in the form of biscuits and contains 10 vitamins and 7 minerals, with nutritional value content: the total energy of 180 kcal, protein 3 grams, fat 6 grams. The number of nutrients in a biscuit serving is 29 grams of total carbohydrates, 2 grams of dietary fiber, 8 grams of sugar, and 120 mg of sodium. PMT- Extension is additional food for

prevention given by Posyandu cadres to toddlers. The goal is to educate parents of toddlers who experience nutritional problems so that these foods can meet the nutritional intake of toddlers.[15]

This research was conducted on toddlers who have participated in the PMT-Recovery program in the April-July 2021 period in the work area of the Cimahi City Health Center. The PMT received is in the form of three types of food which are replaced in turn every ten days, namely; fortified biscuits and high-fat milk, local food according to the nutritional adequacy rate, and nutrient-dense formula drinks for 90 days. Researchers conducted a preliminary study at the Cimahi City Health Office to find out the implementation of the Recovery PMT program in 2021 for the April-July period including the number of participating toddlers, the nutritional status of toddlers before getting the Recovery PMT, and the nutritional status of toddlers after three months of getting the Recovery PMT.

Based on the description of the problem, this study aims to analyze the difference in nutritional status with the index of BB/TB or BB/PB under five with malnutrition status before and after the PMT-Recovery program in the work area of the Cimahi City Health Center.

METHOD

This is an analytic observational study with a cross-sectional research design. The location of the research is in the working area of the Cimahi City Health Center. The research was conducted in October-December 2021 or two months after the PMT Recovery program was implemented. In this study, the population used was children under five who had received PMT Recovery. The sample in this study was 33 children aged 6-59 months from the entire population who met the research inclusion criteria. *Simple random sampling was* used in this research. The inclusion criteria of this study were undernourished toddlers aged 6-59 months with a z-score of more than -2SD who were in the working area of the Cimahi City Health Center and undernourished toddlers aged 6-59 months who were given additional food. Exclusion criteria in this study were toddlers who dropped out of the PMT-Recovery program, toddlers with congenital birth defects, history of premature birth, toddlers who were sick, and incomplete monitoring data. The index used is BB/TB or BB/PB as a comparison because based on the technical instructions for providing additional food, one of the targets is under-fives with less nutrition.[8]

Before the PMT Recovery program was carried out, the Cimahi City

Health Center carried out anthropometric examinations on toddlers who would take part in the program. The selected toddlers are toddlers with the results of measuring weight according to height or body length of more than -2SD.

Characteristics of respondents were collected through a method (there is no complete data per child on the characteristics of the respondents). The assessment of the consumption of PMT Recovery was not carried out quantitatively because there were no records of the consumption of PMT Recovery so only toddlers were asked to ask whether or not toddlers had consumed the PMT Recovery that was given.

The method used is anthropometric measurements with an index of BW/TB or BW/PB. The results of these measurements are then calculated by z-score with WHO standards-setting in 2006. Weighing using a digital scale and measuring height using a microtoise.

Paired t-test was used to compare the nutritional status of children under five before and after PMT Recovery.

RESULT

In this study, the gender of the respondents was mostly female with 63.6%. One of the daily intakes needed by a person can be determined by gender, on average boys need more energy and protein than girls.[7] The age of toddlers is mostly around 24.80 months, this age is a period of fast growth and development, starting to be easily exposed to infection and physically active, so their daily nutritional needs need to be met.[9]

The nutritional status of children under five is presented in table 1. This data contains the nutritional status of children under the PMT-Recovery program, one month after the PMT-Recovery program and after the PMT-Recovery program. After three months of giving the PMT- Recovery program, the results of anthropometric examinations showed that 21.2% of children under five had a very thin nutritional status, 39.4% of children under five had underweight nutritional status and 39.4% of children under five had normal nutritional status.

Table 1. Distribution of nutritional status of toddlers age 6-59 months in the work area of the Cimahi City Health Center in 2021

Nutritional status	Before PMT Recovery		A month after PMT Recovery		After PMT Recovery	
	n	%	n	%	n	%
Very thin (<-3SD)	7	21.2	12	36.4	7	21.2
Skinny (-3SD sd <-2SD)	14	42.4	14	42.4	13	39.4
Normal (-2SD sd +1 SD)	12	36.4	7	21.2	13	39.4
Total						

Table 2 shows the average z-score index of BMI of children under five before PMT-Recovery is 13.53. Then after three months of the PMT-Recovery program, the average z-score for toddlers was 14.81. The results of statistical testing using the Wilcoxon test showed a p-value of 0.000. The p-value is smaller than 0.05 (0.0008 <0.05) meaning that there is a significant difference between the Initial BMI and the 3rd month BMI.

Table 2. Comparison of initial BMI with third month BMI

Ratio	(mean) ± SD	Difference	P-Value
BMI Before	13.53 ± 1.50	-1.28	0.000
BMI 3	14.81 ± 1.88		

Research in the city of Surabaya gave conflicting results. In this study, the results of the statistical test of two paired samples showed that there was no significant difference in the nutritional status of index infants. BB/TB before the PMT-Recovery program and after the PMT-Recovery program as indicated by the value of p=0.585 (p>0.05).[7]

DISCUSSION

Consuming PMT-Recovery foods can help meet the daily energy needs of toddlers who are malnourished so that they can improve the nutritional status of toddlers if consumed properly and appropriately.[10]

t-test results in pairs showed a significant difference in the nutritional status of children under five with BMI/U index after PMT-Recovery with a p-value = 0.000 (p <0.05). The data shows that after three months of PMT Recovery, there was a decrease in the percentage of toddlers with underweight nutritional status from 42.4% to 39.4% and there was an increase in the percentage of toddlers with normal nutritional status from 36.4% to 39.4%.

This study analyzed changes in the nutritional status of children under five with BMI/U index before the PMT-Recovery program and after the PMT-Recovery program. However, the researchers did not examine other variables that might be correlated with the growth and development of toddlers such as genetics, co-morbidities, parenting patterns, etc. Data in Cimahi city shows that 14.4% of the population work as laborers and 42.2% as private employees.11 This can also affect parenting patterns, food intake, and environmental conditions for toddlers to grow.

Supplementary feeding is one of the supplementation strategies for overcoming nutritional problems.

Supplementary feeding aims to increase nutritional intake which ultimately can improve nutritional status.[12] In this study, it was found that there were differences in the nutritional status of toddlers before being given PMT-Recovery and after 3 months after being given PMT-Recovery. Furthermore, it is necessary to carry out a further evaluation by the Cimahi city government and the Cimahi City Health Office regarding the provision of additional food.

CONCLUSION

The results show that there are differences in the nutritional status of children under five before the PMT-Recovery program and after three months of the PMT-Recovery program. The researcher recommends to other researchers who want to conduct further research to include other factors that may influence changes in nutritional status in under-fives with poor nutritional status.

CONFLICT OF INTEREST

We hereby declare that there is no conflict of interest in the scientific articles that we write.

ACKNOWLEDGEMENT

The researcher would like to thank the respondents, the respondent's mother, the posyandu and health centers involved, and the Cimahi City Health Office for helping researchers and participating in the research.

REFERENCES

1. Indonesian Ministry of Health. Technical guidelines for nutrition education in the provision of local supplementary foods for pregnant women and toddlers. 2018. p.1–63 [Downloaded February 25, 2022]
2. Damayanti D, Pritasari, Tri Nugraheni L. Nutrition in the life cycle. Jakarta: Ministry of Health of the Republic of Indonesia; 2017. [Downloaded July 16, 2022]
3. Regulation of the Minister of Health of the Republic of Indonesia number 41 (Permenkes RI). About balanced nutrition guidelines. Minister of Health RI. 2014. [Downloaded February 25, 2022]
4. Ministry of Health of the Republic of Indonesia. Ministry of health performance report 2020. Ministry of Health Republic of Indonesia 2021. 2021;1–224. [Downloaded May 9, 2021]
5. Indonesian Ministry of Health. Stunting Bulletin. Indonesian Ministry of Health. 2018;301(5):78–1163. [Downloaded May 5, 2021]
6. UNICEF. Nutrition capacity in Indonesia. Unicef [Internet]. 2018;14.

Available at: https://www.unicef.org/indonesia/media/1816/file/Nutrition Assessment 2018.pdf. [Downloaded February 25, 2022]

7. Aryastami NK, Tarigan I. Policy studies and management of stunting nutrition problems in Indonesia. Health Research Bulletin. 2017;45(4):233–40. [Downloaded May 5, 2021]
8. Putri ASR, Mahmudiono T. The effectiveness of supplementary feeding (PMT) recovery on the nutritional status of toddlers in the working area of Simomulyo Health Center, Surabaya. Amrita Nutrition. 2020;4(1):58. [Downloaded February 25, 2022]
9. Adelasanti AN, Rakhma LR. The relationship between compliance with the consumption of supplementary food for toddlers and changes in the nutritional status of toddlers at PUSKESMAS Pucangsawit Surakarta. 2018;1(2):92–100. [Downloaded February 9, 2022]
10. Regulation of the Minister of Health of the Republic of Indonesia number 51 (Permenkes RI). About nutritional supplementation product standards. Minister of Health RI. 2016. [Downloaded February 25, 2022]
11. Open Data Cimahi. Cimahi City population based on type of work. https://data.cimahikota.go.id/organization-detail/39?page=2. 2020. [Accessed February 25 2022]
12. Indonesian Pediatrician Association (IDAI). WHO Growth Curve. IDAI. Jakarta. 2020:1-2..
13. Teja M. Stunting toddlers in Indonesia and its management. Body Researcher Pussy DPR RI expertise. 2019;XI(22):13–8.
14. Zuhairini Y, Kasmanto H, Nugraha GI. Mother's early pregnancy Body Mass Index as the most playful indicator of mother's weight gain during pregnant. Maj Kedokt Bandung. 2016;48(3):171–5.
15. Ministry of Health. Technical guidelines for supplementary feeding in the form of biscuits for thin toddlers and pregnant women with chronic energy deficiency (KEK). Indonesian Ministry of Health. 2020;
16. Vilcins D, Sly PD, Jagals P. Environmental risk factors associated with child stunting: a systematic review of the literature. Ann Glob Heal. 2018;84(4):551–62.
17. Syari M, Serudji J, Mariati U. The role of macronutrient intake for pregnant women on infant birth weight in Padang City. J Health Andalas. 2015;4(3):729–36.